

# Unit 2 Test – Chemistry (Chemical Reactions)

23 K 15 T 12 C 24 A 72 Total

Your name: Answers

**Part 1 – Multiple Choice:** Select the best answer to each of the following questions. Write your answer on the blank space provided here.

1 E	2 C	3 C	4 A	5 B	6 A	7 B	8 C	9 D	10 E
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1. Which of the following is exactly the same as  $O_2F_2$ ?

- a) OF
- b)  $O_3F_3$
- c)  $O_4F_4$
- d) all of the above
- e) none of the above

2. How many atoms of hydrogen are in ammonium sulfate,  $(NH_4)_2SO_4$ ?

- a) 2
- b) 4
- c) 8
- d) 12
- e) 42

3.  $Ca + AgNO_3 \rightarrow Ca(NO_3)_2 + Ag$  is an example of which type of reaction?

- a) synthesis
- b) decomposition
- c) single displacement
- d) double displacement
- e) combustion

4. Which of the following elements will replace cobalt in a single displacement reaction?

- a) magnesium
- b) nickel
- c) hydrogen
- d) (a) and (b)
- e) (a), (b) and (c)

5. What is the correct formula for Ammonium Sulfide?

- a)  $NH_4SO_3$
- b)  $(NH_4)_2S$
- c)  $(NH_4)_2SO_4$
- d)  $(NH_4)_3SO_4$
- e)  $NH_4S$

6. Which of the following **does** dissolve in water?

- a)  $CuSO_4$
- b)  $ZnS$
- c)  $Ca_3(PO_4)_2$
- d)  $AlF_3$
- e)  $AgI$

7. What is the name of the compound  $PbO_2$ ?

- a) lead (II) oxide
- b) lead (IV) oxide
- c) lead dioxide
- d) monolead oxide
- e) lead oxygen

8. Which of the following is **hydrofluoric acid**?

- a)  $H_2F$
- b)  $HFO_3$
- c)  $HF$
- d)  $H_3F_2$
- e)  $H_2OF$

9. Which of the following contributes to making acid rain?

- a)  $N_2$
- b)  $NH_3$
- c)  $HBr$
- d)  $SO_3$
- e)  $Ca(OH)_2$

10. Which of the following combinations would give a neutralization reaction?

- a)  $LiOH + Ca(NO)_2$
- b)  $H_3PO_4 + CH_4$
- c)  $SnCl_6 + BeF_2$
- d)  $Cu + AlF_3$
- e)  $HI + KOH$

10 K

11 C	12 E	13 D	14 B	15 E	16 A	17 C	18 B	-----	-----
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11. What is the only material in the world to have a pH of exactly 7?

- a) tap water
- b) spring water
- c) distilled water
- d) pool water, after you add pH pellets
- e) urine

15. What are the products of this neutralization reaction:  $\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow$

- a)  $\text{H}_2\text{O}$  and  $\text{NaSO}_4$
- b)  $\text{H}_2\text{OH}$  and  $\text{NaSO}_4$
- c)  $\text{NaH}_2$  and  $\text{OHSO}_4$  (also known as  $\text{HSO}_5$ )
- d)  $\text{H}_2\text{O}$ , Na and  $\text{SO}_4$
- e)  $\text{H}_2\text{O}$  and  $\text{Na}_2\text{SO}_4$

12. Which of the following is not a **base**?

- a)  $\text{NaOH}$
- b)  $\text{Ca}(\text{OH})_2$
- c)  $\text{Al}(\text{OH})_3$
- d)  $\text{LiOH}$
- e)  $\text{CH}_3\text{COOH}$

16. Which of the following does not represent an **acidic** pH?

- a) 8
- b) 6
- c) 1
- d) 0
- e) -1

8 K

13. Which of the following are products of **combustion** reactions?

- a)  $\text{CO}_2$
- b)  $\text{H}_2\text{O}$
- c)  $\text{O}_2$
- d) (a) and (b)
- e) (a), (b) and (c)

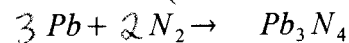
17. How many atoms of hydrogen (H) are in a molecule of  $\text{NH}_4\text{CH}_3\text{OO}$ ?

- a) 3
- b) 4
- c) 7
- d) 12
- e) 43

14. Which of the following does **not** characterize ionic compounds?

- a) Usually solid
- b) Conducts electricity as a solid
- c) Conducts electricity when dissolved in water
- d) High melting point
- e) Soluble in water

18. Balance this reaction (no fractions allowed):



What is the coefficient on  $\text{N}_2$ ?

- a) 1
- b) 2
- c) 3
- d) 4
- e) 5

## Part 2 – Naming

Write the proper name for each of the following compounds in the space provided.

$K_3P$  potassium phosphide

$SCl_2$  sulfur dichloride

$CuO$  copper (II) oxide

$NH_4F$  ammonium fluoride

$Fe_2(SO_4)_3$  iron (III) sulfate

$FePO_4$  iron (III) phosphate

$\overline{2A}$   $Al(CN)_3$  aluminum cyanide

$CO$  carbon monoxide

$CaS$  calcium sulfide

$O_2F_2$  dioxygen difluoride

$N_2O_5$  dinitrogen pentaoxide

$Co_2(CO_3)_3$  cobalt (III) carbonate

2. Write the chemical formula for each of the following compounds in the space provided.

lithium hydride  $LiH$

ammonium carbonate  $(NH_4)_2CO_3$

lead (IV) sulfide  $PbS_2$

calcium sulfide  $CaS$

cobalt (II) phosphate  $Co_3(PO_4)_2$

barium carbonate  $BaCO_3$

$\overline{12A}$  sodium nitride  $Na_3N$

nitrogen triiodide  $NI_3$

tetraphosphorous decaoxide  $P_4O_{10}$

iodine pentafluoride  $IF_5$

hydrofluoric acid  $HF$

copper (II) chloride  $CuCl_2$





### Part 3 – Short Answer

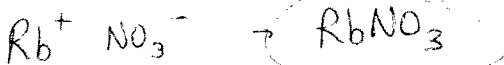
1. Describe the error in each of the following chemical formulas. Then, write the correct formula.

a) Copper (II) Chloride, CuCl  
*no subscripts*

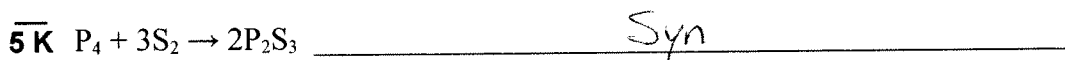
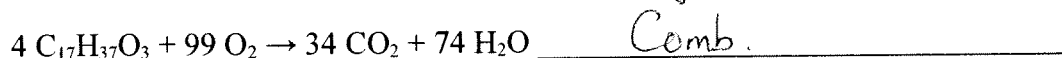


b) Rubidium Nitrate, Rb<sub>3</sub>N

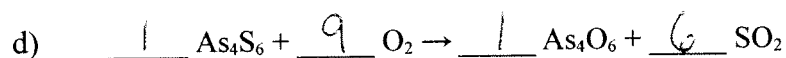
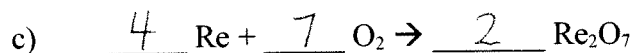
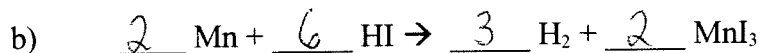
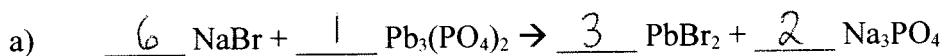
*nitride*



2. Label each of the following chemical reactions as synthesis, decomposition, combustion, single displacement, or double displacement.



3. Balance each of the following chemical reactions:

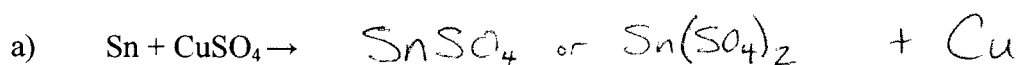


4. You have heartburn, which is when HCl from your stomach begins to burn your esophagus. You have two things in your medicine cabinet:  $\text{Mg}(\text{OH})_2$  or  $\text{H}_2\text{CO}_3$ . Which should you take? Write a complete (and balanced) chemical reaction for the neutralization of the acid.

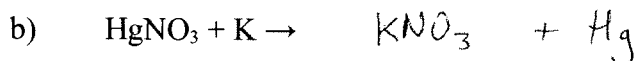
3 C



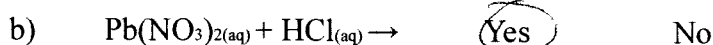
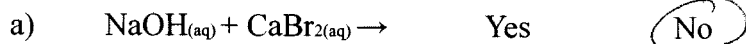
5. Predict the products of the following chemical reactions. You do not have to balance them. If no reaction will occur, write "NR".



5 T



6. Predict whether a solid precipitate will form when the following compounds are mixed. Circle your choice.



4 T

